THE BONE INDUSTRY OF LOS MILLARES. FROM LUIS SIRET TO PRESENT

La industria ósea de Los Millares. De Luis Siret a hoy

RUTH MAICAS RAMOS*

ABSTRACT Thanks to his scientific and artistic academic background, Luis Siret's studies considered some aspects disregarded by his contemporaries 100 years ago. Even though it has been considered that Siret had less interest in the bone industry than in other topics, his observations, experiments, and analysis at Los Millares (Santa Fe de Mondújar, Almería) show the opposite. His working methodology set the basis for the archaeological investigation we practice nowadays. Based on these studies and taking into account recent discoveries, we will examine the materials of animal origin found in the necropolis area of the site. This material preserved in the Museo Arqueológico Nacional will be analysed and a preliminary study of the necropolis will be presented in this paper. This worked bones assemblage includes more than three thousand pieces made of different animal resources and characterized by a great number of symbolic items, ornaments and a few pointed tools.

Key words: Chalcolithic, South-eastern Iberian Peninsula, Shell, Ostrich Egg, Bone, Ivory, Archaeological Pioneers.

RESUMEN Gracias a su formación tanto científica como artística los estudios de Luis Siret concedieron una gran importancia a aspectos no contemplados por sus contemporáneos. Aunque se ha considerado que su interés por los materiales óseos era menor que el concedido a otros conjuntos, en el caso de Los Millares (Santa Fe de Mondújar, Almería) sus observaciones, experimentaciones y analíticas anticiparían un modo de trabajo que hoy es inherente al conjunto de la investigación arqueológica. Partiendo de estos estudios y teniendo en cuenta las aportaciones de recientes descubrimientos, revisaremos los materiales de origen animal procedentes de la necrópolis que de este yacimiento conserva el Museo Arqueológico Nacional, presentando un estudio preliminar. La industria ósea de nuestra colección está formada por más de tres mil piezas realizadas sobre distintos soportes de origen animal y caracterizada por un gran número de objetos simbólicos y ornamentales, siendo escaso el grupo de apuntados.

Palabras clave: Calcolítico, Sureste de la Península Ibérica, Concha, Huevo de avestruz, Hueso, Marfil, Pioneros de la arqueología.

* Departamento de Prehistoria. Museo Arqueológico Nacional. *ruth.maicas@mecd.es*
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INTRODUCTION

Luis Siret was one of the main figures in the early history of archaeology in Spain. He established the basis for South-eastern peninsular prehistory, first with his brother Henry and later on his own. Alongside his foreman Pedro Flores and sons, he dug and studied hundreds of archaeological sites during the last decades of the 19th century and the first third of the 20th century. Most of this author's collections are in the Museo Arqueológico Nacional (MAN) located in Madrid and among these Los Millares (Santa Fe de Mondújar, Almería) is one of the highlights.

Los Millares is a landmark for Late Prehistory in the Mediterranean area and one of the most important archaeological sites of the Chalcolithic in Europe. Pedro Flores at the orders of Siret started his excavations in Los Millares in 1891 (Siret, 1893:33-57). In the 50s, Martín Almagro y Antonio Arribas resumed the field studies. A team from the University of Granada led by Fernando Molina developed the last archaeological excavation in Los Millares (Molina and Cámara, 2005).

Los Millares is located in the Southeast of the Iberian Peninsula, currently a semi-desert environment, but less arid in the days of the Chalcolithic. Moreover, geologic analysis proves that the coast was not far from the site at that time (fig. 1).

The site covers 19 hectares and comprises a walled enclosure, a great necropolis and 13 forts. Control over arable and pastureland, concentration of the population, increasingly specialised crafts and the consolidation of extensive trade networks were all required in order to constitute a complex political system based on the interdependence of minor settlements and larger seats of power (Molina and Cámara, 2005). The main assemblage of Millares' MAN collections belongs to the necropolis. The grave goods made from organic materials from the first excavations are presented here.

Considering his scientific knowledge from his studies as an engineer and the artistic know-how acquired by his family's education, Luis Siret is a good example of what we would consider nowadays a multidisciplinary person. He dedicated his attention to other kind of archaeological materials, although in the case of Los Millares the abundance of bone artefacts and their variety led to his interest in these assemblages.

Much information about Los Millares is preserved in Siret's collection in MAN's archives. On the one hand, we have Flores' notes on site since October 1891, written in his notebooks and letters. On the other hand, we have three important Siret's manuscripts that describe the initial studies of Los Millares: *Listes Générales de Sépultures* (MAN 1944/45/FD01362), a primary classification of Late Prehistory of Spanish Southeast regions through graves, which include Millares' structures. *Los Millares* (MAN 1944/45/FD01439) is a folder with several notes and drawings of maps, materials (Pl. 2) and funerary constructions. The third manuscript is *El libro de los Análisis* (MAN 1944/45/FD01116) which includes some of his closest studies of the archaeological materials retrieved in his different excavations, including Los Millares. In this book, Siret shows his interest not only in the results of the research but also in the experimental processes that were carried out. In addition, we keep

Fig. 1.—The location of Los Millares in the Iberian Peninsula and the detail of the first Siret map of the site (Los Millares manuscript MAN 1944/45/FD01439_003c).

other documents like the "*Diccionario*", a heterogeneous collection of documents organized in alphabetical order (Maicas, 2014:179-194).

Siret's observations compiled in these papers are an essential starting point for the study of the bone artefacts collections of Los Millares. Even though we do not have texts in *Libro de los Millares,* the drawings have detailed and accurate notes on the appearance of the objects. The outstanding materials found in the recent excavations in the archaeological area of Valencina de la Concepción-Castilleja de Guzmán (Sevilla) illustrate the similarities between the two bone assemblages.

FIRST IMPRESSIONS

The work with the old collections presents some differences from the current excavations. The materials in our assemblages had a long history after their recovery, and they need some periodic revisions to the documents to make sure that they are properly organized. The number of pieces and the documents from these old collections require an enormous effort, and this paper should be considered a preliminary progress report in which we try to assess what we have and, what we

had. Therefore, this is essentially based on the qualitative aspects rather than in the quantitative aspects. Nevertheless, we highlight some interesting features of the bone assemblage.

The same protocols used in previous studies have been applied to this one (Maicas, 2007). The microscopic study has not concluded, but in this subject we have the usual problems of an old collection regarding the alteration of use-wear traces. It was also necessary to create a database that we are still implementing.

Flores' excavations in Los Millares were focused on 75 tombs. Two of them (numbers 6 and 72) are currently in the Museo de Almería, but the rest are mostly preserved in the MAN.

Not every material was retrieved from the first excavations. Flores indicates in his notebooks that he could not retrieve all the materials, but he tried to take notes on everything that was there. For example, in his eighth notebook he refers to Tomb 32, writing "around 12 pots, cups and pouts, broken and non-broken, I take five of them" (MAN 1944/45/FD00599). Therefore, even if he was not as explicit about the bone objects as about the other materials, we must assume that the number of artefacts was at some point larger than we have preserved nowadays.

A third of the burials excavated had objects made of bone, most of them beads or molluscs perforated as pendants. Taking into account the preserved elements in Siret's collection, there would be more than 3000 objects of animal origin, which would be around a 30% of the whole assemblage of materials at the necropolis. This is a very high percentage for this group of materials, but we must consider the selective collection of Pedro Flores.

The Los Millares bone industry used shell, ostrich's egg, bone, ivory and boar's tusks. The presence of antler is unusual even though antler is preserved in the faunal remains. The existence of ivory and ostrich's egg in certain structures shows that they are prestige tombs. This indicates that Tomb 7 and Tomb 40 (Schuhmacher, 2012:47) as well as Tomb 5 and Tomb 12 are prestige structures (fig. 2).

The MAN collection samples of bones directly examined to date are made from diaphyses of horses, deer, *bovidae,* and to a lesser extent *suidae*, as well as a small number of bird's bones. The presence of these taxa has also been determined in other areas of the site (Altamirano, 2014:tab. 2).

The Phalanx and *Tolva* "idols" are the most frequent objects, which are present in at least half of the burials. It is possible that Flores did not retrieve all of them but, comparing the descriptions of the foreman and Siret's notes and considering the preserved pieces in MAN, we suggest that around a hundred phalanges were retrieved. However, not all of them were modified, and they showed different characteristics. They normally are made of horse and deer phalanges and present diverse degrees of transformation. Even though there are many horse phalanges, *Equus* is represented by a small number of remains in the faunal reports of the site (Peters and Von Den Driesch, 1990). The decorated pieces are very scarce. The only eye idol corresponds to Tomb 7, which is not a part of the MAN's collections but Ashmolean Museum's (Dimas Martín Socas and M.ª Dolores Camalich personal communication, Nov. 2018).

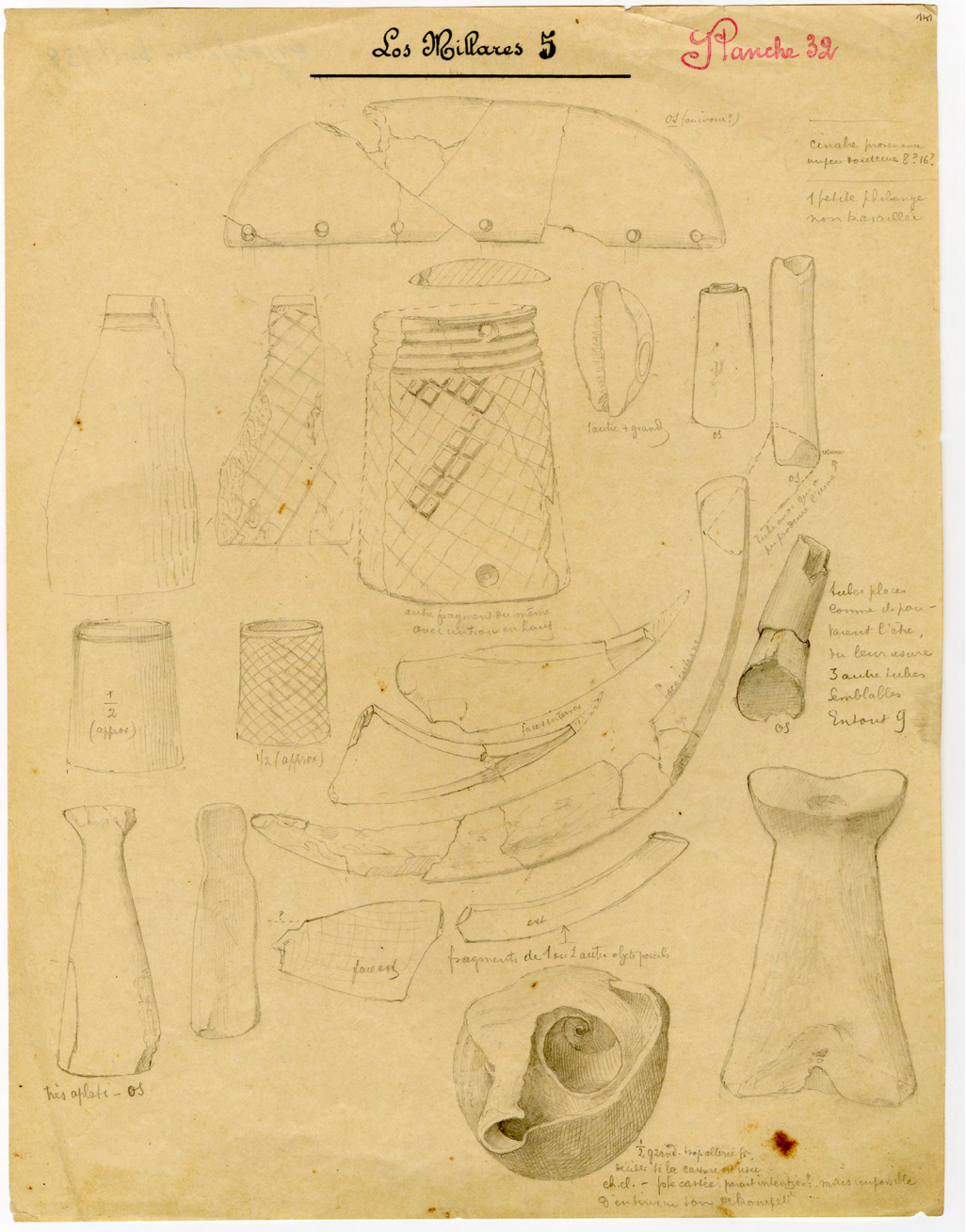

Fig. 2.—Siret drawing of materials from Tomb 5 of *Los Millares*. (MAN 1944/45/FD01439_141r).

Usually we observe smoothed surfaces that soften the natural shape. In some pieces, deep carvings can be seen, and the abrasion in the proximal epiphysis could be related to the orientation of the object and its stability. Sometimes this working generates constricted necks and the loss of facet joints. From time to time the polishing labour was so intense that it cracked the bone open. The resultant forms seem to imitate the "tolva idols," which are also numerous at Los Millares.

The "tolva idols" of Los Millares were made in stone and bone and in both cases; there is a great diversity in size. The ones in stone were made from plaster or altered alabaster and less commonly in limestone. Those of animal origin were made from ivory (fig. 3) or bone. It is difficult to know what the purpose of these pieces was, but at least in some cases they could be handles. Siret made some investigations of the ivory pieces and he sent some idols to other researchers, for example to John or Arthur Evans (Beltrán, 2011:31), as he marked on *Planche* 61 of the "*Libro de los Millares*". He considered the presence of hippopotamus' ivory in the site, but recent analysis has only identified this material in sites from the first part of the second millennium (Schuhmacher, 2014: tab.1). Nevertheless, not everything has been analysed yet.

Fig. 3.—"Tolva idol" from Tomb 40. Museo Arqueológico Nacional. (MAN 1976/1/MILL/40/145. Photo: Verónica Schulmeister Guillén.

A small set of bone trimmed pieces were made from flat and normally narrow rods, similar to others in schist. These "idols" were related to the "idolos bitriangulares" of the eastern peninsula (Soler, 2017:fig. 7.17.A). We interpreted at least some of them as spatulas or bobbins such as the Millares 36 (Barranco del Viaducto 2).

Pointed objects are the most frequent form in the bone assemblages of Post-Palaeolithic sites, but not in our case. Although different groups, especially rods, have been documented, we preserve less than 50 pieces, and even though not all of the objects were collected, this is a small quantity compared to the total amount of the bone industry of Los Millares tombs and the comments from Flores do not differ too much from this number. Only a few fragments correspond to robust pieces that could be identified as generic awls. The rods are narrow and flat. In general, they are long and thin pointed objects and they were regularised by intense and careful abrasion. The rods in ivory having an ornamental function, but precise data from recent excavations may introduce other possibilities (Altamirano y Luciañez, 2016:281).

One of the unique pieces from the bone industry collection of Los Millares is a serrated dagger found in Tomb 7 (fig. 4), similar to others made in flint, but in this case made of bone. Due to its fragility, it must have been made as a grave good. In this burial, another piece of a semi-circular perforated plaque could have been a part of the handle, judging by the parallel reconstruction that the dagger of Montelirio offers (Luciañez *et al.,* 2013:fig. 10.a).

We also emphasise the combs preserved, from Burials 12, 40 and 74. The most significant piece is the comb found in Tomb 12, made in ivory, carved and painted (fig. 5). Siret indicates that this was made from two pieces joined by spikes and notches (Siret, 2014:87). It is a decorated piece with a delicate design of incised drawings in zigzags. A brief analysis (FTIR Spectroscopy) before restoration of the piece in IPCE (Instituto de Patrimonio Cultural de España) confirmed that it was made from ivory. This study also exposed evidence of a polysaccharide adhesive related to starch (possibly a preservative used by Siret or his assistant, G. Gossé) and colouring substances such as cinnabar for the red colour, oxygen rich silicates for the brown tones, and vegetable carbon for the black colours. The most recent analysis determined that it was Asian ivory (*Elephas maximus*) (Schuhmacher, 2012:48). Recently the excavations of the archaeological site of Valencina-Castilleja have provided four fragments with characteristics similar to our comb (Luciañez and García San Juan, 2016:266, fig. 5).

Another characteristic of the bone industry in Los Millares is the relative abundance of what we have called handles and other authors have considered cylindrical boxes. These objects are frequently found in Portuguese sites, and they are related to the Egyptian boxes and to those of the Near East (Schuhmacher, 2012:48,50). Around 20 pieces were open at their smallest ends and were far bigger than the beads of this morphology. In some cases, they were retrieved with the metallic element inserted in these handles, as Siret draws in his "*Planche* 57" of the "*Libro de los Millares.*" These are heterogeneous pieces, ranging from

Fig. 4.—Serrated dagger from Tomb 7. Museo Arqueológico Nacional. MAN 1976/1/MILL/7/87. Photo: Verónica Schulmeister Guillén.

slightly modified diaphyses to gridded decorated objects, in which perforations for fastening are seen.

This crosshatched pattern is also one of the defining characteristics of the ornamental assemblage of Los Millares. Adding to the incised decorated handles (in Tombs 5 and 7) are flat and wide rods (in Tomb 40) (fig. 6), daggers' pommels, and a large perforated plaque (both in Tomb 12), all with deeply carved crossed incisions. The analysis of the colouring substances in this ivory plaque identified the same components present in the comb. Siret had indicated that in Burial 12 there were two plaques of similar characteristics, even though we only have a small

Fig. 5.—Comb from Tomb. 12. Museo Arqueológico Nacional. MAN 1976/1/MILL/12/16. Photo: Verónica Schulmeister Guillén.

fragment of the second one. The recent findings in the South of the Iberian Peninsula (Valencina area) also include similar plaques. Our large gridded plaque could be functionally similar to the objects recovered in recent research (scabbard for knife). Both the sleeve of the dagger from Montelirio and a large semicircle with stressed and perforated decorations present very similar manufacture to our plaque, with the same kind of perforated borders that are only located in the bigger sides of the piece (Luciañez and García San Juan, 2016: fig. 13).

Two similar pieces (semi-circular perforated plaques) were found in Tombs 5 and 7, but the object from Tomb 7 (above-mentioned) is in very bad condition. They were studied by Thomas Schuhmacher. The first is made of ivory and the second of bone (Schuhmacher, 2012:50). It is not easy to interpret them, but it could be a portion of a handle similar to the dagger of Montelirio.

Pair of V-perforated buttons on Tomb 3 and a big bead or perforated disc in Tomb 7 is other small objects in ivory.

Although there is no possible comparison to the thousands of beads that are mentioned in Montelirio (Díaz-Guardamino *et al.,* 2016) there was an abundant assemblage of this ornaments in Los Millares. There are no more than a hundred

Fig. 6.—Rod from Tomb. 40. Museo Arqueológico Nacional. MAN 1976/1/ MILL/12/16. Photo: Verónica Schulmeister Guillén.

bone beads, and they are very simple. They form two groups: cylindrical beads made on the long diaphysis of the *lagomorpha* and birds with a perpendicular cut and barrel-shaped beads with an intensely worn-in diagonal direction. There are over 3200 disc-shaped beads in Tomb 12, but as we do not exactly know what their original position was, we cannot determine their use. For museographic needs they have always been presented as necklaces (fig. 7). Siret requested experiments to

Fig. 7.—Beads from Tomb 40. Museo Arqueológico Nacional. MAN 1976/1/ MILL/40/189. Photo: Verónica Schulmeister Guillén.

determine the identification of ostrich's egg for the preparation of disc-shaped beads (Siret, 2014 [1908]:86-87). Through this study, the author identified around 800 in burial 12 and 21 in burial 63.

In other contexts, big molluscs have been substituted for stone (Bar-Yosef, 2018:212) because of their thickness. In Los Millares we have a large number of beads made on shell, but most of them are of limestone.

In two of the Burials, 16 and 18, two pairs of buttons with appendix on shell were found and in Tomb 7 a fragment cut as a token was found. In both cases, especially the second one, a big species was required judging by the thickness of the pieces.

Minimally elaborated artefacts made from malacological fauna comprise all the frequent types in Mediterranean sites of Late Prehistory. The gastropods *collumbella* and *conus* are the most frequent taxa used, followed by the *luria* and *trivia*. They are also frequently found in recent excavations (Altamirano, 2014) and they were used as beads or as pendants, with both natural and intentional perforation. To a lesser extent, there have been other families like *casidae, muricidae* and *buccinidae*. As usual in similar contexts, when the perforation is intentional in *conus* and *columbella* and other similar gastropods, only one incision is made, while as in the *lurias* and *trivia* normally two holes are made (Maicas, 2007:173-175).

In the malacological assemblage, *Charonia nodifera*, a big gastropod that can measure over 30 cm, is relatively important (fig. 8). According to Siret's documents, there were a dozen in nine different burials. In Los Millares these seashells are perforated by a deep cut in the *columella*. The interpretation of this gastropod as a trumpet is frequent in the Aegean, in Italy and in the Near East in different periods (Bar-Yosef Mayer, 2018), although in the case of the ones in Los Millares, Siret indicated the non-modified apex. In *El Libro de los Millares* the outer lip shows wear from use which smoothes the natural roughness, whereas the inner lip is broken and does not show an intentional regularization. The apex remains closed, so it cannot have been used as a horn.

We also highlight the presence of *Spondylus*, an edible species that is used in different parts of the European continent for ornaments. In Los Millares, the use of this bivalve might have been as a small container or as an end scraper (Tomb 8). We emphasize the importance of malacological ecofacts because most of these objects must have been small containers. Siret points out that the *Patellas* have been polished, but other possible small vessels have been retrieved from the shoreline with a natural wearing corresponding to a *Glycymeris* and *Pecten*. The valves of *Unio* could also be used as small recipients, but it is probable that this taxon was valued especially for its nacre (Siret, 1893:55). It is possible that some serpulids were used as beads too (Bar-Yosef, 2018:211).

PROVISIONAL ASSESSMENT OF THE ASSEMBLAGE

The profusion and variety of the bone industry recovered by Pedro Flores in Los Millares, seats this assemblage among the most relevant in Iberian Late Prehistory (Luciañez and García San Juan, 2016; Altamirano, 2014; López Padilla, 2011; Maicas, 2007; Pascual, 1998).

During the Chalcolithic period, Los Millares had better environmental conditions and the Mediterranean coast was much closer to the site than it is today. These two elements would have been favourable for obtaining the necessary raw material for

Fig. 8.—*Charonia nodifera* from Tomb. 40. Museo Arqueológico Nacional. MAN 1976/1/MILL/40/160. Photo: Verónica Schulmeister Guillén.

the bone industry. Nevertheless, we observe a selection of taxon that is not directly related to environmental availability, so other causes can be argued, probably symbolic or identity aspects.

The majority of the objects manufactured (or used) from hard raw materials of animal origin correspond to ornaments in Los Millares Tombs, but this term is defined more broadly in preindustrial societies. The ornaments could be essential

items in the daily lives for these societies as signs of individual or group identity. The differences that are displayed in the use of these materials (from perforated gastropods from Tomb 1 to the profusion of ivory in Tombs 12 or 40) show us the importance that this assemblage had for identity and prestige.

Pointed and malacological objects, excluding *Charonia Nodifera*, show similar technical characteristic to other assemblages of the 3rd millennium BC, studied in nearby areas (Maicas, 2007; Pascual, 1998). In addition to this objects, which are frequent in any bone industry during the Copper Age in the Iberian Peninsula, Los Millares shows a great variety of "exotic materials".

The existence of ivory objects implies that the trading networks with long-distance contacts and a specialized craftsmanship was probably needed. For these reasons, ivory artefacts would be valued as luxury items by the elites of the Chalcolithic communities.

Although the volume of objects of ivory and discoidal beads is significantly, lower in Millares than in the rich collections of the archaeological area of Valencina de la Concepción (Luciañez and García San Juan, 2016), the presence and characteristics of these objects (decorations, delicate work) suggest connections across the different regions. However, other aspects distance them, as the importance that phalanges had in the funeral context of Los Millares.

Siret unveiled Los Millares. Aware of its importance, he was gathering a dossier of detailed documentation about this site, but he could not finish. An important fragment of Siret's manuscript *Los Millares* was published by Georg and Vera Leisner (1943). His annotations, his drawings and the realization of the first analyses on the materials used were pioneers in his time. The MAN preserves a collection still of reference for the study of these societies in the Iberian Southeast. In this work and in future papers, we will try to go in depth in the study of the bone industries of the Chalcolithic societies that we began to know thanks to Luis Siret, one of the first forefather of Archaeological research in Spain.

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